FIG. **18** illustrates a more detailed view of the ball **135** and socket **134** in accordance with an examplary embodiment of the invention. Ball **135** is fixedly attached by post **140** to secondary display panel **132** and rotates within socket **134** which, as is shown in this embodiment comprises two flanged hemispheres **141** and **142** assembled and tightened by screws (not shown) through holes drilled at center line **143** through the flanges. Socket **134** is fixedly attached to base **136** at surface **137**, and is grooved at **146** to accommodate post **140** as it rotates about the center of ball **135** to position display element **132** with respect to base **136**.

FIG. **19** illustrates the cylindrical surface **137** in base **136** to which spherical guide **134** is fixedly attached.

FIG. **20** illustrates a multiple LCD configuration utilizing pivotal hinge connections **147**. Each pivotal hinge connection **147** provides more than the normal hinge degrees of freedom. For the primary LCD **131**, it can now rotate from left to right. For the two side LCDs **148**, they are capable of rotating forward and backward, and beyond the plane of the primary LCD **131**.

In accordance with other aspects of the invention, the extensible pivotal member comprises an audio side speaker. Further, several such pivotal members may comprise any combination of displays, speakers, or other such interface elements useful on a desktop or laptop computer or other such device.

ADVANTAGES OVER THE PRIOR ART

It is an advantage of the preferred embodiment of invention that enlargement of a viewing screen is provided without increasing the footprint of the base device.

It is a further advantage of the invention that there is provided an improved viewing screen, rotatable within a plurality of degrees of freedom with respect to a base device.

It is a further advantage of the invention that there is provided a screen mounting apparatus for an enlarged viewing screen including a secondary screen positionable at any orientation with respect to a base device and within a plurality of degrees of freedom with respect to a primary screen without enlarging the footprint of the base device.

ALTERNATIVE EMBODIMENTS

It will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without departing from the spirit and scope of the invention.

Accordingly, the scope of protection of this invention is limited only by the following claims and their equivalents.

We claim:

1. An interface apparatus, comprising:

a base element;

a primary interface element;

a secondary interface element;

a first attachment mechanism attaching said secondary interface element at a single point to said primary interface element, said first attachment mechanism being pivotable within a plurality of degrees of freedom;

said primary interface element being characterized by a major axis and a minor axis; and

said first attachment mechanism is rotatable about at least one axis parallel to said major axis of said primary interface element and at least one axis parallel to said minor axis of said primary interface element;

wherein said first attachment mechanism comprises a first ball and a first socket.

2. An interface apparatus, comprising:

a base element;

a primary interface element;

a secondary interface element;

a first attachment mechanism attaching said secondary interface element to said primary interface element, said first attachment mechanism being pivotable within a plurality of degrees of freedom and rotatable about at least one axis parallel to a major axis of said primary interface element and at least one axis parallel to a minor axis of said primary interface element; and

a second attachment mechanism for rotatably attaching said primary interface element to said base element, said second attachment mechanism comprising a hinge enabling rotation of said primary interface element about a single axis, and wherein said first attachment mechanism is positioned for rotation about axes offset from said single axis.

3. The interface apparatus of claim **2**, wherein said second attachment mechanism comprises a second ball and a second socket adapted to enable rotation of said primary interface element about a plurality of axes of rotation.

4. The interface apparatus of claim **3**, wherein said second ball is fixedly attached by a post to said primary interface element; said second socket is fixedly attached to said base element and grooved so as to direct movement of said post in a manner enabling rotation of said second ball about a plurality of axis of rotation.

5. An interface apparatus, comprising:

a base element;

an interface element;

an attachment mechanism attaching said interface element at a single point to said base element, said attachment mechanism being a ball and socket pivotable within a plurality of degrees of freedom; and

interconnecting circuitry adapted for interconnecting said base element and said interface element;

wherein said ball is fixedly attached by a post to said interface element; said socket is fixedly attached to said base element and grooved so as to direct movement of said post in a manner enabling rotation of said ball about a plurality of axis of rotation.

6. The interface apparatus of claim **5**, said interconnecting circuitry being adapted for interconnecting said base element and said interface element throughout the motion enabled by the groove in said socket.

7. An interface apparatus, comprising

a base element;

a primary element;

a secondary element;

a first attachment mechanism attaching said secondary interface element at a single point to said primary interface element, said first attachment mechanism being pivotable within a plurality of degrees of freedom;

said primary interface element being characterized by a major axis and a minor axis; and

said first attachment mechanism is rotatable about at least one axis parallel to said major axis of said primary interface element and at least one axis parallel to said minor axis of said primary interface element;

further comprising a second attachment mechanism for rotatably attaching said primary interface element to said base element.